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ABSTRACT

The guidelines used in the accreditation of industrial engineering programs are discussed. Changes that have taken place in engineering curriculum are described, along with the philosophy of educators in formulating industrial engineering program requirements in the areas of faculty, facilities, curriculum, administration, and scholastic work. (MLH)

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ACCREDITATION OF INDUSTRIAL ENGINEERING PROGRAMS

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ACCREDITATION OF I. E. PROGRAMS

The principle purpose of this paper is to discuss the accreditation of Industrial Engineering programs, in the hope that some analogies can be drawn which will be helpful to those seeking accreditation for Engineering Management programs.

It is first desirable to sketch the general background and current status of accreditation of Industrial Engineering programs. As many of you know, ECPD started functioning in the 1936-38 period; no engineering curriculum can claim ECPD accreditation prior to that period. In the case of Industrial Engineering, ten programs were accredited during that period which have maintained accreditation during the intervening four decades. These universities were Alabama, Columbia, Florida, Tehigh, Ohio State, Oklahoma State, Penn State, Pittsburg, Syracuse, and VPI. In addition, several others were initially accredited prior to and during WW II.

We are all aware of the rapid post WW II development of engineering curriculum; Industrial Engineering shared in this growth. At present, some 67 programs in Industrial Engineering are accredited through action of the A.I.I.E. Ad Hoc Visitors Committee.

The import of this long history of accreditation is clear. Industrial Engineering has not compromised with the concept of "Engineer first; then an Industrial Engineer." We have not only complied with ECPD minima, we have fully supported the underlying concepts giving rise to ECPD standards. Furthermore, the leaders of our profession have been actively engaged in the high councils of ECPD. Indeed, M. R. Lohmann and Richard Forberg have been recent presidents, J. W. Enell is currently treasurer.

It is believed that Industrial Engineering can serve as a model for Engineering Management insofar as accreditation is concerned. It is first noted that Industrial Engineering, like Engineering Management, is not highly oriented to physics (or chemistry) as a underlying science. Although almost all IE's take chemistry and physics in the same measure as our brethren in civil, mechanical, and electrical engineering, we consider mathematics as our basic science, and also draw heavily from the social sciences -- especially psychology, sociology, and economics. We emphasize design as do our brethren, but emphasize design of management information - decision systems, and more lately governmental and service systems rather than hardware types of systems. Over the years we have developed our own engineering sciences, following carefully the basic definition of "engineering science" as set forth by ECPD, the "Goals of Engineering" reports and other reports of deliberation by engineers and engineering educators.

As a result of this latter development, a currently accredited industrial engineering program contains substantially less of the classical engineering sciences that did an accredited program of the 30's or even of the 60's. Our profession has demonstrated that engineering economy, engineering statistics, ergonomics, and operations research, if taught in the spirit of the definition, are indeed fundamental engineering sciences. It is noteworthy that engineering economy is a dominant part of every professional engineering examination. In our more [illegible]htened programs, these new engineering sciences are not unique to Indust[illegible] Engineering, but are part of every engineer's fundamental training.

In considering the actual criteria for accreditation of Industrial Engineering programs, we are indeed fortunate. First we have the general criteria published annually and revised occassionally by ECPD; I refer to the "Annual Report" of ECPD. The Forty-second Annual Report, as of September 30, 1974 is the most recent.

It should be noted that this new report contains several clarifications in criteria since the previous edition.

Next we have two excellent sets of guidelines, one for the basic four year program, another for the advanced level programs authorized two years ago by ECPD. Our "basic" guidelines were prepared in 1968 under the direction of the late Dr. David Baker, and have served eminently well since that time. Indeed, the committee which developed the advanced guidelines drew heavily upon the earlier document, and recommended no changes. The advanced criteria were developed under the direction of Dr. Byron Saunders, who will assume direction of A.I.I.E.'s Visitor's Committee later this year.

It is noteworthy that these guidelines are under annual scrutiny, by the Visitors who use them, and, periodically, by a committee of Visitors. This writer is now chairing a committee to consider the special criteria which may be needed for programs where terms other than "Industrial" are used as descriptors, e.g. "Industrial and Systems", "Industrial and Management".

These guidelines attempt to state minimum standards, and to counsel the Visitor as to basic expectations for an acceptable Industrial Engineering program. They speak to the five basic ECPD criteria, (Faculty, Facilities, Curriculum, Administration, and Scholastic work) and expand on them as they apply to Industrial Engineering.

Perhaps the essential lesson to be drawn from Industrial Engineering for those interested in accreditation of Management Engineering programs is that there are no real short cuts, nor "umbrellas" under which the program can seek shelter. It will be necessary, by and large, to meet all criteria as now stated. Science and math content must be present, as must the engineering sciences. The program must be "Engineering first - specialization second." Each coursed claimed under a

specific category must be proved - by text, syllabus, and the work of students - to be what it claims. If a course unique to Engineering Management is presented, it must be carefully defined, and defended.

Your branch of the profession has not, to my knowledge, a professional society to defend your interests, to represent you in the high councils of ECPD, to prepare guidelines, or indeed to furnish Visitors for the ECPD process. Perhaps this is where you need to start - to define your profession, its goals, and the needed educational process to produce future professionals. Perhaps now is the time to start.